

2/2 011

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119316

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF THERMAL DEHYDRATION UPON THE WIDE LINE PMR SPECTRA OF MG (H SUB2 PO SUB4) SUB2.2H SUB2 O, CA(H SUB2 PO SUB4) SUB2.H SUB2 O, AND BA (H SUB2 PO SUB4) SUB2. 0.1H SUB2 O WERE STUDIED AT 25 AND MINUS 120DEGREES. THREE OVERLAPPING BANDS WERE OBSD. IN THE SPECTRA: THE 1ST BAND, ATTRIBUTED TO CRYSTN. WATER, IS ABSENT IN BA PHOSPHATE AND DISAPPEARS FROM THE OTHERS AFTER DEHYDRATION AT 250DEGREES, THE 2ND BAND, WHICH BELONGS TO OH GROUPS OF H SUB2 PO SUB4 PRIME NEGATIVE IONS AND TO WATER OF LIMITED MOBILITY, INDICATES THE BEGINNING OF H SUB2 PO SUB4 PRIME NEGATIVE DECOMPN. AT 250DEGREES, THE BAND DISAPPEARS AT 450DEGREES IN THE CASE OF MG PHOSPHATE, THE 3RD BAND OF MOBILE WATER REMAINS IN THE SPECTRUM EVEN AFTER THE SAMPLE HAS BEEN DEHYDRATED AT 600DEGREES. THE SLIGHTLY MORE COMPLEX BEHAVIOR OF CA PHOSPHATE IS ALSO DESCRIBED. THE LINEWIDTHS AND 2ND MOMENTS ARE GIVEN AS WELL AS THE CALCD. INTERPROTONIC DISTANCES.

UNCLASSIFIED

USSR

UDC 532.528

KUZNETSOV, G. N., and SHCHEKIN, I. Ye., Acoustics Institute of  
the Academy of Sciences USSR, Moscow

"Interaction of Pulsating Bubbles in a Viscous Liquid"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 4, Oct-Dec 72, pp 565-570

Abstract: The problem of interaction of two pulsating bubbles in alternating motion in a viscous liquid is analyzed. From a system of four differential equations, the parameters of radial and alternating motion of bubbles can be determined to within terms of the  $(a/l)^3$  and  $(b/l)^3$  orders, where  $a$  and  $b$  are the bubble radii and  $l$  is the distance between the bubbles. Analytical expressions for the motion speed of bubbles and their interaction time are derived in first and second approximations by the method of small parameters. Theoretical results of the analysis are compared with experimental parameter values of the motion of bubbles. The application of a derived system of differential equations of radial and alternating motion of two spherical bubbles is discussed on the example of a partial case of interaction of two pulsating bubbles. One illustration, eighteen formulas, thirteen bibliographical references.

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SHCHERKIN, Yu. K.

DISSOCIATING GASES AS COOLANTS AND WORKING  
SUBSTANCES AT ATOMIC POWER PLANTS

JPRS 60560  
16 November 1973

Translation of Russian-language materials presented at the  
Third All-Union Conference by A.K. Krasin, et al.,  
Energeticheskii Tsentr, 1973, Minsk. UDC: 621.311.622.987.  
signed to press 12 April 1973

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USSR

UDC 530.1+53.001.5

SHCHEKINA, L. I.

"The Notions of 'Motion' and 'Development' and Their Role  
in the Study of Physical Processes"

Ponyatiya 'dvizheniye' i 'razvitiye' i ikh rol' v izuchenii  
fizicheskikh protsessov (cf. English above), Moscow, Moscow  
University, 1970, 147 pp, ill., 48 kop. (from RZh-Fizika, No 1,  
Jan 71, Abstract No 1B2K)

Translation: Contents: Chapter 1. The Origin and Formation of  
Categories of Motion and Development. Chapter 2. The Essence  
of Motion and Its Laws. Chapter 3. The Essence of Development  
and Its Laws. Chapter 4. The Variety of Structural Levels of  
Organization of Material Systems. Chapter 5. The Scientific-  
cognitive Role of Concepts of Motion and Development.

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- 102 -

1/2 010 UNCLASSIFIED  
TITLE--SYNTHESIS OF DISILYLUREAS -U- PROCESSING DATE--20NOV70  
AUTHOR--(04)-SHCHEKINA, T.V., KOZYUKOV, V.P., GOLDIN, G.S., TSIONO, S.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 821-3  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--UREA SYNTHESIS, AMMONIA, ORGANOSILICON COMPOUND, ETHER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PRUXY REEL/FRAPE--3002/1065 STEP NO--UR/0079/70/040/004/0821/0823  
CIRC ACCESSION NO--AP0128492  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128492

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PASSING OXY NH SUB3 INTO (CCNCH  
SUB2 CH SUB2 CH SUB2 SIME SUB2) SUB2 O IN ET SUB2 O GAVE 95PERCENT (R  
PRIME1 R PRIME2 NCONH(CH SUB2) SUB3 SIME SUB2) SUB2 Z (I) (Z EQUALS O, R  
PRIME1 EQUALS R PRIME2 EQUALS H), M. 127DEGREES. BUNH SUB2 SIMILARLY  
GAVE 85PERCENT I (Z EQUALS O, R PRIME1 EQUALS H, R PRIME2 EQUALS BU), M.  
58-90DEGREES. SIMILARLY WERE PREPD. THE FOLLOWING I (70-92PERCENT) (Z, R  
PRIME1, AND R PRIME2 GIVEN): O, H, C SUB6 H SUB13, M. 42-40DEGREES; O,  
ET, ET, RESIN; C, BU, BU, RESIN; CH SUB2, ET, ET, M. 208-10DEGREES; CH  
SUB2, BU, BU, M. 187-8DEGREES; (CH SUB2) SUB3, H, BU, M. 38-9DEGREES;  
(CH SUB2) SUB3, H, C SUB6 H SUB13, RESIN; (CH SUB2) SUB3, ET, ET, RESIN;  
AND (CH SUB2) SUB3, BU, BU, RESIN.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--SYNTHESIS OF POLYSILYLUREAS AND POLYSILYLUREYLENES -U-  
AUTHOR--(04)-GOLDIN, G.S., TSIDMO, S.N., SHCHEKINA, T.V., KOZYUKOV, V.P.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(4), 307-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--MOLECULAR STRUCTURE, SPECTROSCOPIC ANALYSIS, ISOCYANATE, UREA,  
SOLUBILITY, ORGANIC SOLVENT, ORGANOSILICON COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--3006/1240 STEP NO--UR/0460/70/012/004/0307/0309  
CIRC ACCESSION NO--AP0134914  
UNCLASSIFIED



2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134914

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OLIGOMERIC POLY(SILYLUREAS) (I, R EQUALS 0, CH SUB2, (CH SUB2) SUB2, OR (CH SUB2) SUB3) WERE PREPD. BY A REACTION OF BIS((GAMMA ISOCYANATOPROPYL)DIMETHYLSILYL)ALKANES (II) OR 1,3,BIS((GAMMA ISOCYANATOPROPYL),1,1,3,3,TETRAMETHYLDISILOXANE (III) WITH MENH(CH SUB2) SUB2 NHME. REACTION OF N SUB2 H SUB4 OR PHNHNH SUB2 WITH II OR III GAVE POLY(SILYLUREYLENES) (IV, R EQUALS 0 OR (CH SUB2) SUB3), ALMOST INSOL. IN ORG. SOLVENTS. THE STRUCTURE OF THE POLYMERS WAS DETD. BY IR SPECTROSCOPY AND ELEMENTAL ANAL.

UNCLASSIFIED

USSR

DZAGUROV, S. G., ~~SHCHEKOKHIKHINA~~, Ye. A., and OMEL'CHENKO, T. N., State Control Institute for Biomedical Preparations imeni L. A. Tarasevich, Ministry of Health USSR

"Principles of Lyophilization of Enteroviruses. I."

Moscow, Voprosy Virusologii, No 5, 1971, p 622

Abstract: The stability of attenuated poliomyelitis type 1 virus (LSc2ab strain) was studied. The use of mixtures of peptone and glucose or cow's milk and glucose proved to be ideal for lyophilizing poliomyelitis virus, although other stabilizers were somewhat effective in this respect. These stabilizers can be useful in obtaining a lyophilized preparation with an adequate titer capable of surviving exposure to a broad range of temperatures (4 to 50°C).

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SHCHERKOLDINA, V. I.

THE PHARMACOLOGY OF DIPYROXIME

UDC 615.246.5.015

Article by S.M. Golikov, ~~and I.G. Shchukina~~ and I.G. Shchukina, Moscow, Farmakologiya i Toksikologiya, Russian, No. 5, 1972, submitted 1 February 1972, pp 530-532.

Experiments on mice, rats and cats showed that dipyroxime is a re-activator of cholinesterase which has, in the structure, 2 nucleophilic oxime groups, has a pronounced antidotal and reactivating cholinesterase effect after poisoning animals by anticholinesterase organophosphorus compounds. The synthesized oxime free analog does not possess these properties. The revealed certain cholinolytic activity of the oxime-free analog of dipyroxime is much lower than the activity of dipyroxime. The investigations indicated the decisive role of the oxime group in the antidotal effect of dipyroxime (Pharmacology and Toxicology, No. 5, p. 559, 1972).

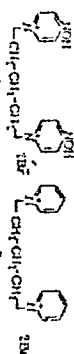
We showed previously (S.G. Golikov and coauthors, 1966) that dipyroxime (I) (see Formula 1) sufficiently quickly restores the cholinesterase activity inhibited by organophosphorus insecticides (FOP) and antagonizes well with FOP in the effect upon isolated organs and systems.

This study involved an attempt to explain the role of the oxime group in the therapeutic and prophylactic effect of dipyroxime. For this purpose, we studied, in parallel, the pharmacological properties of the oxime-free analog (bromous 1,3-bis (pyridine) propane) synthesized at our suggestion by candidate of chemical sciences I.N. Sontina (see Formula II). The physical properties of the oxime-free analog: a white crystalline powder, odorless; easily soluble in water, hardly soluble in ether, benzene, melting point 242-244 degrees.

Experiments were performed upon 200 white mice of both sexes, 80 white rats and 32 cats.

JKS 58093  
30 Jan 73

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172 063 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--POSSIBILITIES OF A SHOCK TUBE IN OBTAINING AND STUDYING A DENSE LOW  
TEMPERATURE PLASMA -U-  
AUTHOR--(03)--LOPAKIN, B.N., FORTOV, V.E., SHCHEKOTOV, O.E.  
COUNTRY OF INFO--USSR  
SOURCE--TEPLOFIZIKA VYSOKIKH TEMPERATUR, VOL. 8, JAN.--FEB. 1970, P.154-158  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--DENSE PLASMA, LOW TEMPERATURE PLASMA, SHOCK TUBE, CESIUM,  
SHOCK WAVE PROPAGATION, THERMODYNAMIC ANALYSIS, COMPUTER CALCULATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1992/0381 STEP NO--UR/0294/70/003/000/0154/0158  
CIRC ACCESSION NO--AP0111574

UNCLASSIFIED

2/2 063

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0111574

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL ANALYSIS OF THE POSSIBILITY OF OBTAINING A DENSE LOW TEMPERATURE CESIUM PLASMA IN A SHOCK TUBE WITH HEATING. THE PROPAGATION OF A DIRECT AND REVERSE SHOCK WAVE IN CESIUM VAPOR IS CALCULATED, TAKING INTO ACCOUNT THE PLASMA NONIDEALITY BY APPLYING THE DEBYE THEORY IN A LARGE CANONIC ENSEMBLE. A SYSTEM OF EQUATIONS DESCRIBING THE CONSERVATION OF MASS, MOMENTUM AND ENERGY AT THE SHOCK WAVE IS INTEGRATED WITH THERMODYNAMIC EQUATIONS ON A COMPUTER. OPTIMAL EXPERIMENTAL CONDITIONS FOR OBTAINING SUCH PLASMAS ARE OBTAINED AS A RESULT.

UNCLASSIFIED

USSR

UDC 582.285.22:633.11:582.001.4

KONOVALOVA, N. YE., SUZDAL'SKAYA, N. V., ZHEMCHUZHINA, A. I., SOROKINA, G. K.,  
and SECHEKOTKOVA, T. V.

"Dynamics of the Race Composition of Agents of Grain Rust in the USSR"

Leningrad, Mikologiya i Fitopatologiya, Vol 4, No 2, 1970, pp 107-122

Abstract: The distribution of brown, yellow, and stem rust of wheat, in hundreds of varieties, and two types of pervasive oat rust throughout the USSR are described, with varying ecological conditions influencing the formation of new types and/or the persistence of the old. A highly virulent rust from the Far East, responsible for destruction of 80% of the crop, had lost its virulence on the West side of the Urals. Mutation depends on many factors, none of which is of similar value in all types. Where the organism passes through an intermediate host, the appearance of new types of very likely: this is rare in asexual stages.

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USSR

UDO 621.382.3

GUSEV, V.M., SHCHIGOL', F.A., NAUMENKO, V.G., LEVITSKIY, K.B., SHCHELCHKOV, B.I.,  
-- KOZLOV, YU. G., ZAKHAROV, V.I.

"Silicon Planar n-p-nn<sup>+</sup> Microwave Transistor Obtained By The Method Of Ion  
Implantation"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--  
Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 155-158 (from  
RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B221)

Translation: The method of ion implantation in conjunction with planar technology  
makes it possible to obtain n-p-nn<sup>+</sup> microwave transistors with a critical frequency of amplification with respect to the current of  $f_T = 2$  GHz. Specimens were  
obtained and investigated with a diffusion base and an ion-implantation emitter,  
and devices in which both the collector and emitter junctions were produced by  
the method of ion implantation. Basic static and frequency parameters of the  
devices are presented and also the dependences  $V_{ct} = f(I_a)$ ,  $\beta_f = f(I_k)$ . 3 ill.  
6 ref. Summary.

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Magnetohydrodynamics

USSR

UDC 621.378.9:533.9.02

BASOV, N. G., ZAKHAROV, S. D., KROKHIN, O. N., KRYUKOV, P. G., SENATSKIY, Yu. V., TYURIN, Ye. L., FLDOSIMOV, A. I., CHEKALIN, S. V., SHCHELEV, M. Ya.

"Studies of a Plasma Formed by Ultrashort Laser Pulses"

Moscow, Kvantovaya Elektronika, No. 1, 1971, pp 4-28

Abstract: Experimental studies of processes occurring in the high-temperature heating of a plasma by focusing ultrashort laser radiation on the surface of lithium deuteride are described. Studies of plasma heating with laser radiation of duration  $10^{-11}$ - $10^{-12}$  sec were begun in 1968 at the Laboratory of Quantum Radio-physics of the Physics Institute imeni P. N. Lebedev. Fast neutrons were recorded upon focusing these pulses on the surface of a lithium deuteride target, indicating the rise of conditions for a thermonuclear reaction and for obtaining a plasma of high temperature and density. Subsequent research raised the following questions: how does absorption of energy by a solid occur if the laser radiation is concentrated in a pulse with a duration of several picoseconds? How is the strong reflection of laser radiation from the target explained? What are the possibilities of raising ion temperature, and consequently neutron yield, in

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USSR



BASOV, N. G., et al, Kvantovaya Elektronika, No. 1, 1971, pp 4-28

heating a plasma with ultrashort pulses? Shadow photographs of the plasma with illumination by ultrashort pulses and the recording of plasma dispersion with the aid of an electron-optical converter are described. The same electron-optical converter was used to study the change in the reflection of laser pulses with time, and x-ray measurements were made of the electron temperature of the plasma. A review of the basic experimental data indicates that the results are from laser pulses consisting not of one, but of several subpulses. Experiments show that the interaction of each subpulse with the target is not the same but a function of the previous history and repetition time of the subpulse relative to the beginning of the process. Heating of the plasma occurs as follows: one of the first subpulses incident on the target ionizes it to a depth approximately equal to the wavelength of the laser radiation. When the value of  $n_e$  becomes comparable to the value of  $n_{cr}$ , the remaining part of the subpulse is reflected. Heating of the plasma to a temperature of several electron-volts occurs simultaneously with ionization. As a result, the plasma formed is slowly dispersed. All subpulses incident on the target at this stage will be reflected until the particle density drops, as a result of dispersion, to a value corresponding to  $n_{cr}$ . At this time high-temperature heating of the plasma is possible. It is thus established that reflection of ultrasonic pulses arises in plasma regions where the electron density is close to critical. Other subjects discussed in the article include plasma radiation and heat conductivity, the effect of laser radiation pressure, and electron-ion relaxation in a plasma formed by a powerful ultrashort laser pulse.

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Molecular Physics

USSR

KOROBKIN, V. V., MALYUTIN, A. A., and SHCHELEV, M. Ya., Physics Institute  
imeni P. N. Lebedev, Moscow

"On the Limiting Time Resolution of Electron-Optical Converters of the PIM-  
UMI Type"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 1, Jan 71, pp 216-219

Abstract: An experiment showed that the basic limitation on the resolution of an electron-optical converter is the energy spread of electrons from the photocathode. The time resolution of the converter is characterized by an apparatus function consisting of the result of the action of a light pulse of infinitely small length on the converter. It is concluded that the half-width of the apparatus function of electron-optical converters of the PIM-UMI type is approximately equal to  $2 \cdot 10^{-11}$  sec. This indicates that these converters can resolve 2 pulses with infinitely small length divided by a time interval of up to  $(5-10) \cdot 10^{-12}$  sec. Since in this case the technical resolution was  $5 \cdot 10^{-12}$  sec, it is assumed that the limiting value of the apparatus function of a converter of the PIM-UMI type has been achieved. Further narrowing of the half-width of the apparatus function would be

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KOROBKIN, V. V., et al, Zhurnal Tekhnicheskoy Fiziki, No 1, Jan 71, pp 216-219

possible only through a considerable rise in the field strength close to the photocathode or through some other methods decreasing the spread in the time of flight of photoelectrons from the cathode to the screen, possibly by making the electrons monochromatic. In this case, the basic limitation on the apparatus function of the converter is imposed by the time of establishing a field in the system of deflecting plates. In the first approximation this time is evaluated as  $d/c$ , where  $d$  is the diameter of the electron beam between the plates and  $c$  is the velocity of light.

USSR

UDC: 621.385.530.145-6:53

BAISOV, N. G., ZAKHAROV, S. D., KROKHIN, G. N., KRYUKOV, P. G., SENATSKIY, Yu. V., CHEKALIN, S. V., FEDOSIMOV, A. I., SHCHELEV, M. Ya.

"Investigation of Heating of a Plasma Formed by Ultrashort Laser Pulses"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 8, pp 48-52  
(from REh-Radiotekhnika, No 12, Dec 70, Abstract No 12D464)

Translation: In order to form a plasma, ultrashort pulses of emission from a neodymium glass laser operating under conditions of self-synchronization of modes on a wavelength of  $1.06 \mu$  were focused on a target of LiD in a vacuum. The period between pulses was 15 nsec. The individual laser pulse is not simple, but rather consists of a series of peaks, the interval between them and the number of peaks varying from flash to flash. The overall pulse duration reaches 10 nsec, the duration of an individual peak being in the range of  $10^{-11}$ - $10^{-12}$  s. The output energy is  $\sim 0.1$  J. The diameter of the focal spot on the target is  $2 \cdot 10^{-2}$  cm. Heating of the plasma was studied by the methods of shadow photography and schlieren photography. A. K.

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- 102 -

1/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--SELF FOCUSING FILAMENTS AS A RESULT OF THE MOTION OF FOCAL POINTS  
-U-  
AUTHOR-(04)-KOROBKIN, V.V., PROKHOROV, A.M., SEKOV, R.V., SHCHELEV, M.YA.  
COUNTRY OF INFO--USSR  
SOURCE--JETP LETTERS (USA), VOL. 11, NO. 3, P. 153-7 (FEB. 1970)  
DATE PUBLISHED----FEB70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--ELECTRON-OPTICS, FLUID PROPERTY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/1784 STEP NG--US/0000/70/011/003/0153/0157  
CIRC ACCESSION NO--AP0133689

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133689

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. USING AN ELECTRON OPTICAL  
CONVERTER TO INVESTIGATE THE KINETICS OF SELF FOCUSING IN LIQUIDS, THE  
AUTHORS SHOW THAT FILAMENTS PRODUCED ARE THE RESULTS OF MOTION OF  
INDIVIDUAL FOCAL POINTS. (15 REFS.). FACILITY: USSR ACAD.  
SCIS.

UNCLASSIFIED

1/2 047 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--RADIATION DYNAMICS AND SPECTRAL CHANGES OF NEODYMIUM LASER DURING  
--OPERATION WITH SELF-SYNCHRONIZATION OF AXIAL MODES -U-  
AUTHOR-(03)-KOROBKIN, V.V., NALYUTIN, A.A., SHCHELEV, M.YA. S

COUNTRY OF INFO--USSR

SOURCE--PIS'MA, ZH. EKSP. TEOR. FIZ. 1970, 11(3) 168-173

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEODYMIUM LASER, LASER RADIATION SPECTRUM, LASER BEAM,  
SPECTROGRAPHIC ANALYSIS, SPECTRAL FINE STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1796

STEP NO--UR/0386/70/011/003/0168/0173

CIRC ACCESSION NO--AP0054630

UNCLASSIFIED

2/2 047

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0054630

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STUDY WAS PERFORMED WITH A ND LASER OF 140 CM RESONATOR LENGTH, IN THE CENTER OF WHICH WAS PLACED A CELL WITH A FILTER. THE AXIAL MODE OF THE RADIATION WAS SEPD. BY USING A DIAPHRAGM OF 2.7 MM DIAM. THE DEVELOPMENT TIME OF THE LASER RADIATION WAS THEN STUDIED ON AN ELECTRO OPTICAL CAMERA, AND COMPARISON OF THE VARIOUS STAGES OF THE LASER PULSES WAS MADE. FOR THIS, THE LASER BEAM WAS SPLIT INTO 2, AND DIRECTED TOWARDS THE SLIT OF THE CAMERA WITH A LOG TIME OF 0-100 NSEC BETWEEN THE 2 BEAMS. THREE CHARACTERISTIC CASES WERE DISTINGUISHED: (1) THERE WERE ONLY 2 INTENSE PEAKS IN THE AXIAL MODE AT THE START AS WELL AS AT THE END OF STIMULATED EMISSION; (2) THERE WERE MANY PEAKS IN THE AXIAL MODE AT THE START AND AT THE END OF THE STIMULATED EMISSION; (3) THERE WERE 2 PEAKS AT THE START, AND MANY PEAKS AT THE END. ALSO THE TIME DEVELOPMENT OF THE LASER SPECTRUM WAS MEASURED BY USING A DIFFRACTION SPECTROGRAPH WITH RESOLUTION 12.2 CM PRIME NEGATIVE-MM. A NONUNIFORM SPECTRUM WAS OBSD. IN THE BACKGROUND OF THE SPECTRUM WAS FOUND A MORE INTENSE REGION WITH SHARPLY DEFINED STRUCTURE. THE SPECTRAL STRUCTURE VARIED FROM ONE PEAK TO THE OTHER. A SATISFACTORY EXPLANATION FOR THE STRUCTURE OF THE PEAKS, FOR GIANT PULSES, CANNOT BE GIVEN.

UNCLASSIFIED



1/3 056

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--FILAMENTS WHICH ARE SELFFOCUSING BY MOVEMENT OF FOCAL POINTS --U-

AUTHOR--(04)--KOROBKIN, V.V., PROKHOROV, A.M., SEROV, R.V., SHCHELEV, M.YA;

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, PIS'MA V ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY  
FIZIKA, VOL. 11, NO. 3, 5 FEB 70, PP 153-157

DATE PUBLISHED--05FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--OPTIC PROPERTY, ELECTRON OPTICS, IMAGE CONVERTER, SINGLE MODE  
LASER, NITROBENZENE, CARBON DISULFIDE, LASER RADIATION, LASER SELF  
FOCUSING EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1463

STEP NO--UR/0386/70/011/003/0153/0157

CIRC ACCESSION NO--AP0123371

UNCLASSIFIED

2/3 056

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0123371

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE QUESTION OF WHETHER FILAMENT OF SELF FOCUSING IS THE RESULT OF MOVEMENT OF INDIVIDUAL FOCAL POINTS OR WHETHER IT EXISTS IN A STEADY STATE IS INVESTIGATED. TO CLARIFY THE PROBLEM OF WHICH THEORY IS VALID, THE AUTHORS INVESTIGATED THE KINETICS OF SELF FOCUSING IN LIQUIDS, USING AN ELECTRON OPTICAL IMAGE CONVERTER. THE RADIATION OF A SINGLE MODE LASER (ONE ANGULAR AND ONE AXIAL MODE) WAS PASSED THROUGH A CELL OF LENGTH 10 CM CONTAINING NITROBENZENE OR CARBON BISULFIDE. THE RADIATION AT THE INPUT TO THE CELL HAD A PLANE PHASE FRONT WITH AN APPROXIMATELY NORMAL TRANSVERSE DISTRIBUTION. THE DIAMETER OF THE INPUT BEAM WAS 0.25 MM AND THE POWER WAS UP TO 1.5 MW FOR A PULSE LENGTH OF SIMILAR TO 15 NSEC. A LIGHT FILTER WAS PLACED IN FRONT OF THE IMAGE CONVERTER WHICH TRANSMITTED ONLY LASER RADIATION. A TYPICAL PHOTOGRAPH SHOWS THAT AT THE OUTPUT OF THE VESSEL THE DIAMETER OF THE SELF FOCUSING SPOT IS APPROXIMATELY 5 MU, CORRESPONDING TO THE RESOLUTION OF THE RECORDING SYSTEM. THE SELF FOCUSING SPOT EXISTS SMALLER THAN 0.5 NSEC AND THEN DISAPPEARS; THEN A SUBSEQUENT SPOT APPEARS AFTER 1-2 NSEC AT THE SAME PLACE. SOMETIMES ANOTHER SELF FOCUSING SPOT APPEARS AT A DISTANCE OF SIMILAR TO 50 MU, BUT THIS IS OBSERVED VERY RARELY. UNDER THE CONDITIONS OF THIS EXPERIMENT THE MAXIMUM VALUE OF  $N$  EQUALS  $E-E_{SUBCR}$  CONGRUENT TO  $\gamma$ , WHERE  $E$  IS THE INPUT FIELD STRENGTH AND  $E_{SUBCR}$  EQUALS  $1-\text{SQUARE ROOT OF } N_{SUB2} (KA) \text{ PRIME}^2 \times K$  IS THE WAVE NUMBER,  $A$  IS THE RADIUS OF THE INPUT BEAM, AND  $N_{SUB2}$  IS THE NONLINEAR INDEX OF REFRACTION).

UNCLASSIFIED

3/3 056

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0123371

ABSTRACT/EXTRACT--THE STEADY STATE THEORY PREDICTS THE EXISTENCE OF ONLY SEVEN FOCAL POINTS FOR  $N$  EQUALS 7, WHICH IS FAIRLY CLOSE TO THE EXPERIMENTAL DATA OBTAINED IN THIS PAPER. THE VELOCITY OF THE FOCAL POINTS IS ALSO IN AGREEMENT WITH THIS THEORY. THE AUTHORS FEEL THAT THE EXPERIMENTAL RESULTS SUPPORT THE VALIDITY OF THE STEADY STATE THEORY OF SELF FOCUSING. FACILITY: PHYSICS INSTITUTE IMENI P. N. LEBEDEV, ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

1/2 037 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--DYNAMICS OF RADIATION AND SPECTRUM CHANGES OF A NEODYMIUM LASER  
WITH SELF LOCKING OF AXIAL MODES -U-  
AUTHOR--(03)-KOROBKIN, V.V., MALYUTIN, A.A., SHCHELEV, M.YA.  
COUNTRY OF INFO--USSR  
SOURCE--JETP LETTERS (USA), VOL. 11, NO. 3, P. 168-73 (FEB. 1970)  
DATE PUBLISHED----FEB 70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--NEODYMIUM LASER, LASER RADIATION SPECTRUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/1782 STEP NO--US/0000/70/011/003/0163/0173  
CIRC ACCESSION NO--AP0133687

UNCLASSIFIED

2/2 037

CIRC ACCESSION NO--AP0133687

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACTS. REPORTS INVESTIGATIONS OF BOTH  
THE TEMPORAL STRUCTURE OF THE EMISSION OF A NEODYMIUM LASER, AND THE  
TIME EVOLUTION OF THE SPECTRAL DISTRIBUTION OF THIS EMISSION.  
FACILITY: USSR ACAD. SCIS.

UNCLASSIFIED

Lasers & Masers

USSR

KOROBKIN, V. V., PROKHOROV, A. M., SEROV, R. V. and ~~SHMELEV~~, M. YA., Physics  
Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Filaments Which Are Self-Focusing by Movement of Focal Points"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fizika, Vol. 11,  
No. 3, 5 Feb 70, pp 153-157

Abstract: The question of whether filament self-focusing is the result of movement of individual focal points or whether it exists in a steady state is investigated. To clarify the problem of which theory is valid, the authors investigated the kinetics of self-focusing in liquids, using an electron-optical image converter. The radiation of a single-mode laser (one angular and one axial mode) was passed through a cell of length 10 cm containing nitrobenzene or carbon bisulfide. The radiation at the input to the cell had a plane phase front with an approximately normal transverse distribution. The diameter of the input beam was 0.25 mm and the power was up to 1.5 Kw for a pulse length of ~15 nsec. A light filter was placed in front of the image converter which transmitted only laser radiation. A typical photograph shows that at the output of the vessel the diameter of the self-focusing spot is approximately 5  $\mu$ , corresponding to the resolution of the recording system. The self-focusing spot exists <0.5 nsec and then disappears; then a subsequent spot appears after

Card 1/2

USSR

KOROBKIN, V. V., et al, Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fizika, Vol. 11, No. 3, 5 Feb 70, pp 153-157

1-2 nsec at the same place. Sometimes another self-focusing spot appears at a distance of  $\sim 50 \mu$ , but this is observed very rarely. Under the conditions of this experiment the maximum value of  $N = E/E_{cr} = 7$ , where  $E$  is the input field strength and  $E_{cr} = 1/\sqrt{n_2}(ka)^2$  ( $k$  is the wave number,  $a$  is the radius of the input beam, and  $n_2$  is the nonlinear index of refraction). The steady-state theory predicts the existence of only seven focal points for  $N = 7$ , which is fairly close to the experimental data obtained in this paper. The velocity of the focal points is also in agreement with this theory. The authors feel that the experimental results support the validity of the steady-state theory of self-focusing.

Card 2/2

- 46 -

SHCHELEV, M. Ya.

PROBLEMS OF INTEGRATED OPTICS  
(Conference in the USA)

Article by candidates of Technical Sciences V. V. Nikitin and M. Ya. Shchelyev, Moscow, Vysokaya Shkola Nauk SSSR, Moscow, Vol. 42, No. 8, August 1972, pp 92-93.

Integrated optics is a relatively new scientific and technical direction which arose 5-7 years ago on the border of classical optics and quantum electronics. The area of investigation of that direction is the propagation, transformation and amplification of electromagnetic radiation of the optical range in dielectric thin-film waveguides and in fiber light conductors. Thin-film integrated devices are characterized by small dimensions, great noise resistance, and a considerable service life, and thanks to that are finding more and more applications in practice.

Investigations in integrated optics are being conducted on a broad front in many countries of the world. The first International Conference on Integrated Optics, held on 7-10 February in Las Vegas, USA, was devoted to the results of those investigations. The organizers of the conference, in which 276 delegates from ten countries participated, were the American Optical Society, the International Union of Theoretical and Applied Physics and its International Commission for Optics.

Examined at the conference was a broad circle of questions of integrated optics connected with measurement techniques in that area, the technology of manufacture and search for materials for active and passive integrated waveguides in the form of films and fibers, and the development of instruments and devices based on those elements.

One of the central problems of integrated optics is the creation of broad-band integrated waveguides with small losses for long-distance optical lines of communication. Studied in that

JR65 57307  
20 Oct 72



1/2 035  
TITLE--ASYMPTOTICS OF FEYNMAN GRAPHS WITH INFRARED DIVERGENCES AND OF  
COULOMB INTERFERENCE -U-  
AUTHOR--(02)-SOLOVYEV, L.D., SHCHELKACHEV, A.V.  
COUNTRY OF INFO--USSR  
SOURCE--YAD. FIZ. 1970, 11(2), 430-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--STRONG NUCLEAR INTERACTION, ASYMPTOTIC SOLUTION, GRAPHIC  
TECHNIQUE, SCATTERING AMPLITUDE, NUCLEAR MODEL, IR RADIATION, COULOMB  
INTERACTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1992/0372  
CIRC ACCESSION NO--AP0111565  
STEP NO--UR/0367/70/011/002/0430/0436  
UNCLASSIFIED

2/2 035

CIRC ACCESSION NO--AP0111565  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT. ELECTROMAGNETIC CORRECTIONS TO THE  
HADRON ELASTIC SCATTERING AMPLITUDE AT HIGH ENERGIES ARE INVESTIGATED  
WITH A SIMPLE RELATIVISTIC MODEL AS AN EXAMPLE. IN THE MODEL THE  
AMPLITUDE IS DESCRIBED BY SIMPLE FEYNMAN GRAPHS. A METHOD IS DEVELOPED  
TO OBTAIN ASYMPTOTICS OF THE FEYNMAN INTEGRALS WITH IR DIVERGENES.  
FACILITY: OB'EDIN. INST. YAD. ISSLED., DUBNA, USSR.

UNCLASSIFIED

USSR

UDC 627.826/.828:624.042.7.001.57

KHESIN, G.L., POPOV, A.I., Candidates of Technical Sciences, DOLBIN, A.I.,  
SHCHELKANOV, I.V., Engineers

"Investigation of Stresses in Buttress-Type Dams Due to the Action of a Seismic  
Load by the Photoelasticity Method"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 3, 1972, pp 26-28

Abstract: The article deals with an approximate experimental method for the  
determination of stresses in hydraulic-engineering structures due to the  
action of seismic forces directed along the stream or across the stream.  
The research procedure is based upon the use of a centrifugal field for  
simulation of the seismic load and using the polarization-optical method for  
determination of the stresses in the dam models. 3 figures, 1 table, 6  
bibliographic entries.

1/1

USSR

UDC 621.317.4

AFANAS'YeV, Yu. V, STUDENTsOV, N. V., and ShchELKIN, A. P.

"Magnetometric Converters, Instruments, and Assemblies"

Magnitometricheskiye Preobrazovateli Pribory, Ustanovki (cf. English above), Leningrad, Energiya, 1972, 272 pp, illustrated, 1 ruble 18 kopecks (from RZh-Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 3, Mar 73, Abstract No. 3 A295K by the authors)

Translation: The book is devoted to the theory and practice of modern means of measuring magnetic induction. The principles of operation, basic parameters, and characteristics of magnetometric converters of various types are examined. A description is given of the circuits and design of instruments using these converters. Attention is given to minimizing the distortions of converters and instruments, and a method and apparatus are described for determining the individual distortions of the instruments.

1/1

USSR

UDC 621.384.6

RAZIN, G.I., SAVENKO, V.G., SHCHERBININ, A.P.

"Increase Of Precision Of Measurers Based On The Hall Effect Of Continuous Currents Of Charged Particle Beams"

V sb. Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp 2 (Materials Of Scientific-Technical Conference. Leningrad Electrical Engineering Institute Of Communications, No 2), Leningrad, 1970, pp 227-231 (From RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 1CA370)

Translation: The effect is considered of various factors (position of beam in an ion conductor and its cross section) on the basic error of a noncontact Hall measurer of the currents of charged particle beams. Summary.

1/1

SHCHELKIN, YU. F.

RARE METAL  
INDUSTRY

SHCHELKIN, YU. F.

A-6

JPRS 54673

10 December 1971

EFFECT OF TEMPERATURE AND THERMAL STRESS FIELDS ON THE FORMATION  
OF THE DISLOCATION STRUCTURE IN SINGLE CRYSTALS OF GALLIUM  
ANALYZED BY THE CROOKS-MILNER METHOD

Article by N. A. Avdeyev, S. S. Yakhromov, N. G. Rilyevskiy, V. B. Orlov, Corresponding Member of the USSR Academy of Sciences, B. A. Salnikov, V. I. Salnikov, Yu. F. Shchekin, State Scientific Research and Planning Institute of Rare Metal Industry, Moscow, Doklady Akademii Nauk SSSR, Moscow, Vol 200, No 2, 1971, Reprinted 30 April 1971, pp 316-319

Dislocations in single crystals grown from a melt are formed basically under the effect of thermal stresses arising during cooling of the liquid during the process of its growth. If these stresses exceed the critical shear of the material at the corresponding temperature, they cause plastic flow which partially or completely removes the thermal stresses. Consequently, the density distribution of the dislocations in the crystal must be determined by the thermal stress field in the temperature range of the plastic material.

However, up to now analysis of the conditions of formation of the dislocation structure of single crystals grown from a melt has been reduced essentially to establishment of the empirical relation of the dislocation density to the magnitude of the temperature gradients in the vicinity of the crystallization front. Here, the defining role was attributed either to the radial [1] or the axial [2-4] components of the temperature gradient. The problem of the volumetric stressed state in the crystal was not considered in these works as a result of the great mathematical difficulties of solving it.

In this paper, a new approach to solving the problem has been used: the schematic of which consists in the fact that the temperature field is calculated on a computer considering the boundary conditions obtained experimentally after which the thermoelastic stress field is calculated. The volumetric distribution of the thermoelastic shear stresses obtained in this way compares with the corresponding values of the yield stresses for gallium arsenide determined from independent experiments. This approach permits analysis of the conditions of formation of dislocations in the crystal growth process.

Single crystals of gallium arsenide were grown from under a layer of molten boron anhydride in the [111] direction. The temperature distribution in the crystal was fixed by tungsten-rhenium thermocouples 0.2 mm in diameter

- 1 -  
[1 - USSR - 1]

USSR

UDC 58.08:582.285.1:632.4

KRIVCHENKO, V. I., ~~SICHEIKO, I. G.~~ and TIMOSHENKO, Z. V., All-Union Research Institute of Plant Growing imeni N. I. Vavilov

"A Method of Evaluating Barley Resistance to Stony Smut and Oat Resistance to Loose Smut"

Leningrad, Mikologiya i Fitopatologiya No 6, 1971, pp 523-525

Abstract: The coats of barley and oat seeds are bruised with an RT-1 tissue grinder and then inoculated with suspensions of the agents of smut. The treated seeds are dried at room temperature and kept for 20 to 40 days in a cool place (5 to 12°C, 60 to 90 percent humidity). The seeds are planted at the usual time in two rows 1.25 m long. An infected standard is placed after every 20 inoculated seeds. The Hannchen (K-4104) and Vantage (K-18504) barley varieties and the L'govskiy 1026 (K-10790) and Anthony (K-8054) oat varieties are used as standards because of their high susceptibility of smut. If the standard shows an attack rate of more than 50 percent, the experimental seeds can be used to characterize the degree of resistance. The latter is assessed both from the percentage of affected ears and from the percentage of diseased plants.

1/1

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USSR

UDC 669.721.372

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SYALOV, G. N.,  
IRTEGOV, N. N., GEMIN, Ya. N., AGALAKOV, V. A.,  
SHCHELKONOSOV, A. A., SABUROV, V. F., and KIRILENKO, I. S.

"Flow Line for Magnesium Production"

Moscow, Tsvetnyye Metally, No 9, Sep 71, pp 36-37

Abstract: An experimental-industrial flow line which uses smelted carnallite as the raw material for the production of magnesium has been established at a Soviet plant. The operation of the flow line is described by reference to a diagram and the distribution of slime (with 20%  $MgO$ ) by electrolyzers showing the maximum output of slime (up to 60% of its total amount) on the first 3-4 electrolyzers. It is shown that the centralized feeding of diaphragm-type electrolyzers provides a 3-4% increase of magnesium output. To maintain normal temperature conditions and compensate for heat losses, it is necessary to provide for an increase of current intensity and electrolyzer output by 10-12%, in comparison with electrolyzers with individual feeding. Two illustr., three biblio. refs.

1/1



Magnesium

USSR

UDC 669.721

VYATKIN, I. P., KECHIN, V. A., MUSHKOV, S. V., SHECHELKONOGOV, A. A., and STOLBOVA, A. D.

"On the Continuous Production of High-Purity Magnesium"

Moscow, Tsvetnyye Metally, No 6, Jun 73, pp 47-48

Abstract: The continuous production of high-purity magnesium by processing the melt with titanium-containing additives in a casting complex is described. The quality of the magnesium produced satisfies the purity requirements for all admixtures, except for iron admixtures. To eliminate iron, the titanium-containing additives are introduced into the refining chamber of the furnace together with crude magnesium; as a result of titanium reacting with iron in the crude, the generated compounds precipitate on cooling on the bottom of the refining chamber. The iron-purified magnesium, under pressure of the next portion of the cast crude, overflows into the pouring chamber; from there it is fed onto the casting conveyer. The iron content, its analysis, and the dynamics of  $C_{Fe}$  change are discussed. Industrial results showed that melts contained 0.003-0.004% Fe and 0.006-0.014% Ti. Two tables, three bibliographic references.

1/1

USSR

UDC 669.721.472(088.8)

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., SYALOV, G. N.,  
IRTEGOV, N. N., SABUROV, V. F., SHCHELKONOCOV, A. A., GRIGOROVSKIY, N. P.,  
and KISELEV, A. V., All-Union Scientific Research and Design Institute of  
Aluminum, Magnesium, and Electrode Industry, Bereznikovskiy Titanium-Magnesium  
Combine

"Method of Cutting-Off the Electrolyte Supply of a Production Line Magnesium  
Electrolytic Reduction Cell"

USSR Author's Certificate No 260905, filed 21 Oct 68, published 5 May 70  
(from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G135 P)

Translation: A method is proposed for switching-off the electrolyte supply  
to a production line magnesium electrolytic reduction cell for subsequent  
diffusion of scum by increasing the temperature of the electrolyte and the  
concentration of magnesium chloride. To avert disruption of the operation  
of the production line electrolytic reduction cell at the input into the  
cathode cell of the electrolytic reduction cell, shields are placed, which  
separate the working space of the electrolytic reduction cell from the elec-  
trolyte flow in the distribution canal.

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USSR

UDC 621.372.853.092.22

SHCHELKOTUNOV, V. A., SHVARTS, V. D.

"Coefficient Method of Calculating the Temperature Field of a Wave Guide Section"

Elektron. tekhnika. Nauchno-tekhn. sb. ferrit. tekhn. (Electronic Engineering. Scientific and Technical Collection. Ferrite Engineering), No 3 (25), 1970, pp 73-78 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B126)

Translation: The thermal conditions of a wave guide section with two methods of arranging the ferrite plate are investigated.

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1/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--MECHANISM OF A REVERSIBLE FAVORSKII REACTION. II. ALKALINE  
SPLITTING OF O-DEUTERATED METHYLETHYL, PHENYLETHYNYL, CARBINOL AND  
AUTHOR--(04)-SHCHELKUNOV, A.V., MOLDAKHMETOV, Z.M., KAKHIZZHANOVA, N.A.,  
FAVORSKAYA, I.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 930-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL REACTION MECHANISM, ALKYNE, IR SPECTRUM,  
SPECTROSCOPIC ANALYSIS, KETONE, ALCOHOL, ISOTOPE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--3006/1324 STEP NO--UR/0366/70/006/006/0930/0935  
CIRC ACCESSION NO--00134448

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134998

ABSTRACT/EXTRACT--(U) GP-6- ABSTRACT. THE REACTION OF MEGLI WITH DC TRIPLE BOND CPH IN THE PRESENCE OF KOD GAVE DC TRIPLE BOND CPH, ETCOCH SUB2 D (I), AND MECHLOCH SUB2 D (II). THE DISTRIBUTION OF D IN THE PRODUCTS, OBTAINED BY DETD. D. OF WATER FROM THE ANAL. COMBUSTION; AND IR SPECTROSCOPY DEFINE THE PATHWAY. FACILITY: KHIM.-MET. INST., ALMA ATA. USSR.

UNCLASSIFIED

USSR

UDC 621.385.623.4

ALFEROV, V.N., VLADIMIRTSEV, M.B., VISHNEVSKAYA, A.M., KOTOV, V.I., PROSIN, B.V.,  
SHCHELKUNOV, G.P., YAMPOL'SKIY, I.R.

"Concerning Phase Stability Of Power Klyatron"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology.  
Scientific-Technical Collection. Microwave Electronics), 1970, Issue 11, pp 136-139  
(from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A171)

Translation: Data are presented characteristic of the dependence of the phase of  
the output signal on the magnitude of the anode voltage, the exciting power, the  
focusing regime, the filament voltage, and the temperature of the cooling water.  
The apparatus for phase measurements is described. The experiments were conducted  
on Type KIU-12AM klyatrons. 2 ref. Summary.

1/1

USSR

UDC 621.385.032.98

SHCHELKUNOV, G.P., YAMPOL'SKIY, I.R., ALFEROV, V.N., MOISEYEV, K.A.

"Process Of Aging Of Power Klystrons With A Positive Polarity Of The Voltage At The Cathode"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics.), 1970, No 1, pp 146-148 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8A103)

Translation: A method is considered for aging of power klystrons (KIU-12), making use of a limiting resistance (the procedure is suitable for devices which have either a thermionic cathode or a cold cathode). During such aging, cases were observed where breakdown was completed even in the course of a voltage pulse. Several devices were aged by the new process. An advance of the voltage to the required magnitude was performing during 0.5--1.5 hours and the number of breakdowns did not exceed 15. After shifting to the usual polarity, additional aging by the ordinary method is necessary, but the time for it shortens to 1--2 hours and the number of breakdowns amounts to 100-300 instead of the 600-800 during aging by the old method. After finishing off of the procedure, it is proposed to eliminate completely the additional aging. The quality of the devices (stability of operation, durability) passing the "without current" aging must be increased substantially, because such aging assures a reduction of failures of the electrodes by breakdowns. 2 ill. 2 ref. G.B. 1/1

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USSR

UDC 621.396.626

SHCHELKHINOV, K.N., KAZOVSKIY, L.G. (Members Of The Scientific-Technical Society Of Radio Engineering, Electronics, And Communication Inani A.S. Popov)

"Noise Immunity Of Optical Communication Lines With Frequency Multiplexing Of Channels Of Discrete Information"

Radiotekhnika, Vol 27, No 3, Mar 1972, pp 1-4

Abstract: The noise immunity is analyzed of an optical communication line with subcarrier oscillations and it is compared with the noise immunity during time multiplexing of pulses of optical radiation. The authors conclude that it is possible with a precision adequate for engineering calculations to approximate the distribution law of the magnitudes derived as a result of optimum post-detector processing of a signal in an optical communication line, with the normal law. In comparison with time multiplexing, multiplexing of channels in an optical communication line with subcarrier oscillations gives a significant energy loss. In the case where only the quantum noise of the signal for a 3-channel system is considered, this loss is evaluated at the following magnitudes: approximately 20 db with AM subcarriers and approximately 15 db with FM subcarriers. 2 fig. 4 ref. Received, 16 Dec 70.

1/1



USSR

UDC 621.385:530.145.6:623

BARBANEL, Ye. S., SHCHELKUNOV, K. N.

"Determining the Noise Immunity of the Heterodyne Method of Receiving an Optical Signal in the Presence of a Turbulent Atmosphere"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. ir-t svyazi. Vyp. 2 (Material of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 2), Leningrad, 1970, pp 81-85 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8 D397)

Translation: A method is proposed for calculating the error of heterodyne reception in an optical communications system considering the turbulent properties of the path. The final formula contains a sign-variable series the number of terms of which is determined by the accuracy of the calculation. Graphs are presented which permit quantitative estimation of the effect of turbulence on the signal amplitude.

1/1

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USSR

VOLCHOK, YU. G., SHCHELKUNOV, K. N. S

UDC 621.391:519.27

"Optimal Reception of Incoherent Signals in Quantum Communications Channels"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi.  
Vyp. 2 (Materials of the Scientific and Technical Conference. Leningrad  
Electrotechnical Communications Institute. Vyp. 2), Leningrad, 1970, pp  
77-81 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8A35)

Translation: This article contains an investigation of the procedure for synthesizing optimal receivers in quantum communications channels. The possibilities of optimizing reception are investigated for the cases of commuting and noncommuting operators of signal and noise field density. This corresponds to the cases of incoherent and partially coherent radiation.

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USSR

UDC: 621.391.81

BARBANEL', Ye. S., ~~SHCHELKUNOV, K. N.~~

"On the Feasibility of Using Composite Signals in Optical Communications Systems"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t svyazi. Vyp. 1 (Materials of the Scientific and Technical Conference of Leningrad Electrical Engineering Institute of Communications--collection of works, No 1), Leningrad, 1971, pp 99-104 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A73)

Translation: The possibility of using composite signals in optical communications systems is considered, and an optimum processing algorithm is constructed for a certain type of pulse train (for a binary system). This algorithm is compared for interference immunity with an algorithm in which simple signals are used. On the basis of the formulas derived, graphs are constructed and conclusions are drawn on the advantages of systems with composite signals. Resumé.

1/1

SHCHELKUNOV, K. N.

Belker, A. S., Krasovskiy, R. R.	Reception of a Fluctuating Optical Signal .....	144
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TECHNICAL TRANSLATION

Doc / HISTC-IT 23-2013-72

87 April 72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION  
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV,  
SEPTEMBER 1968

FOREIGN TITLE: ПРОБЛЕМЫ ПЕРЕДАЧИ ИНФОРМАЦИИ ЛАЗЕРНЫМ ИЗЛУЧЕНИЕМ

AUTHOR: I. A. DERUGEN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY  
IHEM T.G. SCHIEVCHENKO

Translated for ESTC by ACSJ

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- 1/11/72 -

1/2 014  
UNCLASSIFIED  
PROCESSING DATE--13NOV70  
TITLE--A STERILE ROOM FOR REANIMATION OF PATIENTS AFTER  
HOMOTRANSPLANTATION OF THE HEART -U-  
AUTHOR--(05)--BALLYUZEK, F.V., SHANIN, YU.N., KOSTYUCHENKO, A.L.,  
SHCHELKUNOV, V.S., VOLKOV, YU.N.  
COUNTRY OF INFO--USSR  
SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTESIOLOGIYA, 1970, NR 2, PP  
84-87  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ORGAN TRANSPLANT, HEART SURGERY, HOSPITAL EQUIPMENT, ISOLATION  
CHAMBER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1990/0622  
STEP NO--UR/0481/70/000/002/0084/0087  
CIRC ACCESSION NO--AP0108837  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0108837

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

THE AUTHORS COMMIT TO PAPER A  
DESCRIPTION OF THE DESIGN AND RESULTS OF HYGIENIC AND BACTERIOLOGICAL

EVALUATION OF A STERILE ISOLATION ROOM FOR PATIENTS AFTER  
HOMOTRANSPLANTATION OF THE HEART. THE ORGANIZATION OF WORK OF THE  
PERSONNEL IN THE STERILE ISOLATION ROOM IS DEPICTED. FACILITY:  
KLINIKA GOSPITAL'NOY KHIRURGII VOYENNO MEDITSINSKOY AKADEMII IM. S. M.  
KIROVA, LENINGRAD.

UNCLASSIFIED

Organ and Tissue Transplantation

USSR

UDC 616.12-089.843-0.6:616.12-008.315-0.8:725.51

BALLYUZEK, F. V., SHAMIN, Yu. N., KOSTYUCHENKO, A. L., SICHILKUNOV, V. S.,  
VOLKOV, Yu. N., FEDOROV, G. Z., and SUPRUNENKO, Yu. F., Clinic of Hospital  
Surgery, Military Medical Academy imeni S. M. Kirov, Leningrad

"A Sterile Room for the Reanimation of Patients After Homotransplantation of the  
Heart"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 2, Mar/Apr 70, pp 34-37

Abstract: After transplantation of the heart, respiratory infections constitute one of the principal dangers to the patients because of their lowered resistance and immunity. J. Phillips and G. Spencer estimated that respiratory infections caused the death of 1/4 of patients dying after surgery involving extracorporeal blood circulation. A sterile chamber (3.7 X 3 X 2.5 m) has been designed for the reanimation and intensive care of patients after surgery involving extensive trauma and requiring rigorous antibacterial protection. The chamber is constructed of plastic sheets welded together and has an entrance lock consisting of two overlapping, suspended plastic sheets. The chamber has connections for O<sub>2</sub>, N<sub>2</sub>O, and vacuum, a telephone line, and electric connections for a defibrillator and an automatic system which records and transmits outside data on the condition of the patient. Equipment for the intubation of the trachea, healing of the tracheo-

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USSR

BALLYUZEK, F. V., et al, Eksperimental'naya Khirurgiya i Anesteziologiya, No 2, Mar/Apr 70, pp 84-87

bronchial passages, and for producing artificial coughs is located in it. Air that has been sterilized by irradiation is pumped into the chamber, in which the air pressure is higher by 7-10 mm than that outside. After 2-3 hrs. of operation of the chamber, the air in it contains no more than 0-2 possibly pathogenic bacteria per cubic meter and no pathogenic bacteria. The chamber is equipped with windows of transparent plastic, has translucent walls, and is lit from the outside. After adequate sterilization measures, a nurse who takes care of the patient may stay in the chamber and other medical personnel may enter it. The chamber ought to be adequate for the care of patients who have undergone heart transplants.

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- 43 -

"APPROVED FOR RELEASE: 07/20/2001

CIA-RDP86-00513R002202910016-8

1/2 024

TITLE--TRIMECAIN IN PERIDURAL ANESTHESIA --U--  
AUTHOR--~~SHCHELKUNOV, V.S.~~

UNCLASSIFIED

PROCESSING DATE--13NOV70

COUNTRY OF INFO--USSR

SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 2, PP  
77-80

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANALGESIC DRUG, ANESTHESIA, SURGERY, DRUG TESTING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1990/0623

CIRC ACCESSION NO--AP0108838

STEP NO--UR/0481/70/000/002/0077/0080

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001

CIA-RDP86-00513R002202910016-8"

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 024  
CIRC ACCESSION NO--AP0108838  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE AUTHOR ANALYSES 1094 CASES OF  
TRIMECAIN (MESOCAIN) PERIDURAL ANESTHESIA DURING SURGERY, FOR POST  
OPERATIVE PERIDURAL ANALGESIA AND FOR THERAPEUTIC PERIDURAL BLOCKS. HE  
CONDUCTED A COMPARATIVE STUDY OF TRIMECAIN AND XYLOTOX BY "BLIND  
TECHNIQUE" METHOD.  
FACILITY: KLINIKA KHIRURGICHESKIKH BOLEZNEY  
LENINGRAD. SANITARNO GIGIYENICHESKOGO MEDITSINSKOGO INSTITUTA.

1/2 019 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--POSSIBLE USE OF COATINGS BASED ON CYCLO RUBBER RESIN IN THE FOOD  
INDUSTRY -U-  
AUTHOR--(04)--SHAPOSHNIK, S.SH., CHAPURIN, V.I., SHCHELKUNOVA, M.S., KODNER,  
M.S.  
COUNTRY OF INFO--USSR  
SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970, (1) 31-  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, MECH., IND., CIVIL AND  
MARINE ENGR  
TOPIC TAGS--FOOD CONTAINER, COATING PACKAGING, RUBBER, PLASTICIZER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/1627

STEP NO--UR/0303/70/000/001/0031/0034

CIRC ACCESSION NO--AP0106373

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--02OCT70

2/2 019

CIRC ACCESSION NO--AP0106373

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMULATIONS WERE DEVELOPED SUITABLE FOR COATING FOOD CONTAINERS. THE UNDERCOATING CONTAINED CYCLO RUBBER (I) 27.0, DIOCTYL PHTHALATE (II) 10, FE OXIDE 13.5, TALC 13.5, AND SOLVENT R-4 46.0 PARTS. THE TOPCOAT CONTAINED I 27.0, II 10, TID SUB2 27.0, AND R-4 46.0 PARTS. THE COATINGS WERE DRIED AT 80DEGREES FOR SIMILAR TO 24 HR. THE CONTAINERS COATED WITH 2 LAYERS OF THE UNDERCOATING AND 4 LAYERS OF THE TOPCOAT WITHSTOOD THE CORROSIVE ACTION OF H SUB2 O, 1PERCENT TARTARIC ACID (III), OR 40PERCENT ALC. AND 1PERCENT III SOLNS. FOR SMALLER THAN OR EQUAL TO 10 MONTHS. THE UV SPECTRA OF THESE SOLNS. AFTER CONTACT WITH THE COATINGS SHOWED ONLY TRACES OF THE EXTD. ORG. COMPS. PLASTICIZING THE COATINGS WITH NATURAL RUBBER, NATURAL OILS, OR LINSEED OIL GAVE LESS DURABLE COATINGS.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--OFFICER CADETS REPLY TO TRAINING QUESTIONNAIRE -U-

AUTHOR--(02)--SHCHELOKOV, A., MAKUSHIN, R.

COUNTRY OF INFO--USSR S

SOURCE--MOSCOW, KRASNAYA ZVEZDA, RUSSIAN, 17 JANUARY 1970, P 3

DATE PUBLISHED--17JAN70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--MILITARY SCHOOL, SOCIAL SCIENCE, SOCIAL PROBLEM, SURVEYING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1921

STEP NO--UR/9008/70/000/000/0003/0003

CIRC ACCESSION NO--AN0104995

UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AN0104995

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN RECENT TIMES MANY CHANGES HAVE TAKEN PLACE IN MILITARY SCHOOLS. MANY OF THEM HAVE BECOME HIGHER SCHOOLS AND THEY PROVIDE OUR FUTURE OFFICERS WITH THE MOST UP TO DATE SOCIAL, TECHNICAL, AND SPECIALIZED KNOWLEDGE. HOW ARE TODAY'S CADETS LIVING, STUDYING, AND PREPARING THEMSELVES FOR THE DIFFICULT PROFESSION OF COMMANDER? WHAT KINDS OF PROBLEMS ARISE HERE? IN ORDER TO CLARIFY THESE QUESTIONS THE EDITORS OF KRASNAYA ZVEZDA CONDUCTED A SPECIFIC SOCIOLOGICAL STUDY IN FIVE MILITARY SCHOOLS: THE MOSCOW HIGHER COMBINED ARMS COMMAND ORDER OF LENIN, RED BANNER SCHOOL IMENI THE SUPREME SOVIET RSFSR; THE UL'YANOVSK GUARD HIGHER TANK COMMAND TWICE RED BANNER, ORDER OF THE RED STAR SCHOOL IMENI V. I. LENIN; THE HIGHER NAVAL ORDER OF LENIN, RED BANNER, ORDER OF USHAKOV SCHOOL IMENI M. B. FRUNZE; THE RYAZAN' HIGHER AIRBORNE LANDING COMMAND TWICE RED BANNER SCHOOL IMENI THE LENINIST KOMSOMOL; AND THE UL'YANOVSK HIGHER MILITARY COMMAND SCHOOL OF COMMUNICATIONS IMENI G. K. ORDZHONIKIDZE.

UNCLASSIFIED

USSR

UDC 535.8:535.241.13

PISKAREV, V.I., ~~SHCHELCIOV, A.N.~~

"Light Modulation By A Travelling Microwave"

Radiotekhnika i elektronika, Vol XVII, No 5, May 72, pp 1010-1017

Abstract: On the basis of an analysis of a paper by D. Chen and T.C. Lee (IEEE Trans. Microwave Theory and Techn., 1966, 14, 10, 482), a calculation is made for a modulator of light by a travelling microwave, which basically consists of a round waveguide with a coaxially located core of KDP, in the 10-10 GHz range. Evaluations are made of the band, the precision of fabrication of the modulator elements, and the necessary magnitude of the modulation power. The frequency characteristics of the modulator and the dependence of the percentage modulation on the magnitude of the microwave signal were experimentally investigated. A He-Ne laser with a 0.6328 micrometer wave length served as a light source in the experimental installation. The authors thank V.I. Beaspalov and D.M. Bravo-Zhivotovskiy for constant attention to the work and discussion of the result, and L.B. Gordeyev for assistance during construction of the modulator. 6 fig. 7 ref. Received by editors, 19 March 1971.

1/1



USSR

UDC 632.95

YUKHTIN, N. N., ~~SHCHELOKOV, B. I.~~ and SHALINA, N. A.

"Detection of Impurities in Commercial Diuron and Theirs Characterization"

V sb. Khim. Sredstva zashchity rast. (Chemical Plant Protectants -- collection of works), vyp 1, Moscow, 1970, pp 301-304 (from RZh-Khimiya, No 13, 10 Jul 72, Abstract No 13N535 by O. A. Korotkova)

Translation: The principal impurities of commercial diuron are resins (0.5-4.2%), the hydrochlorides of  $\text{Me}_2\text{NH}$  (I) (0.3-0.6%),  $\text{Me}_2\text{NCONHMe}$  (II), 3,4- $\text{Cl}_2\text{C}_6\text{H}_3\text{NHCONHMe}$  (III) and traces of 3,4- $\text{Cl}_2\text{C}_6\text{H}_3\text{NH}_2$  (IV). The resins are formed in the phosgenation stage and in solution with 3,4- $\text{Cl}_2\text{C}_6\text{H}_3\text{NCO}$  enter into condensation with  $\text{Me}_2\text{NH}$ , where they are deposited on the diuron suspension. I is obtained in the condensation stage as a result of incomplete blow-off HCl (gas). II is formed from the  $\text{Me}_2\text{NH}$  and  $\text{Me}_3\text{N}$  contained in the returned  $\text{PhCl}$ . The presence of III is due to the impurity  $\text{MeNH}_2$  in commercial  $\text{Me}_2\text{NH}$ . IV apparently is a product of the reaction of 3,4- $\text{Cl}_2\text{C}_6\text{H}_3\text{NCO}$  with small amounts of moisture.  
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- 59 -

SHCHELOKOV, N. A., Main Veterinary Administration, Ministry of Agriculture  
Kirgiz SSR

"Economic Benefits from Foot-and-Mouth Disease Control Measures"

Moscow, Veterinariya, No 1, 1972, pp 41-42

Abstract: In Kirgizia, foot-and-mouth disease often breaks out during the spring, while the cattle are being driven to summer pastures. Even in the course of the disease is mild, the animals usually lose about 10% of their fat and milk output decreases sharply and is not restored until the next calving. The overall economic loss due to decreased productivity, deaths, culling, delayed sale of young pedigreed animals, costs of quarantine, and so forth amounts to thousands of rubles for each affected farm, as the many examples in the article show. Institution of the time-tested control measures, especially vaccination of animals, will result in large savings.

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- 81 -

USSR

UDC 546.791.6

SHCHELOKOV, R. N., Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of Sciences USSR, Moscow

"Dismutation of Mixed Uranyl Compounds"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 3, Mar 71, pp 610-613

Abstract: The term dismutation was first coined by Chernyayev to represent a phenomenon in which a compound, formed during a substitution reaction and containing mixed groups coordinated in the internal sphere, breaks down under prevailing reaction conditions to yield compounds with identical groups or mixed complexes of another type. Three cases are analyzed in the paper: reaction of  $[\text{UO}_2(\text{SO}_4)(\text{OH}_2)_3]$  with  $\text{NCS}^-$  ions in aqueous solution, reaction of  $[\text{UO}_2(\text{C}_2\text{O}_4)(\text{OH}_2)_3]$  with  $\text{NCS}^-$ , and reaction of  $[\text{UO}_2(\text{CH}_3\text{COO})_2(\text{OH}_2)_2]$  with  $\text{NCS}^-$ . On the basis of these reactions, it is concluded that only mixed acido groups with bond strength comparable to uranyl undergo dismutation --- oxalatothiocyanato, oxalato-acetato, acetato-thiocyanato, sulphato-thiocyanato, sulphato-chloro. On the other hand, the compounds with widely differing substituents such as fluoro-sulphato are stable towards dismutation. Difference in solubility of formed complexes and structural characteristics of starting materials affect dismutation.

1/1

- 15 -

Acc. Nr. **AP0034096** Abstracting Service:  
CHEMICAL ABST. 4-70

Ref. Code  
**NR 0078**

74174t Uranyl hydroxooxalate compounds of the dioxalate series. Shchelokov, R. N.; Belomestnykh, V. I. (Inst. Obshch. Neorg. Khim., M. Kurnakova, Moscow, USSR). Zh. Neorg. Khim. 1970, 15(1), 139-46 (Russ).  $M_n[UO_2(C_2O_4)_2(OH)] \cdot nH_2O$  (where M and n are: Na 1; K 2;  $C_2H_5$  2;  $(C_2H_5)_4NH$  1;  $1/2C_2H_5(NH_2)_2$  2; and Cs 2) were prepd. and their ms, temps. of dehydration, temps. of oxalate decompn., and  $\mu(UO_2^{2+})$  were detd.  $[UO_2(C_2O_4)_2(OH)]^{2-}$  can form not only by deprotonation of the aquo group in  $[UO_2(C_2O_4)_2(OH_2)]^{2-}$  but also by a displacement of the bridging oxalate group in  $[(UO_2)_2(C_2O_4)_3]^{4-}$ , or by the interaction of  $2[UO_2(OH)_2(OH_2)]$  groups with  $[(UO_2)_2(C_2O_4)_3]^{4-}$  and  $3C_2O_4^{2-}$ . Mechanism of formation of these compds. is discussed. HMJR -

REEL/FRAHE

19710739

Acc. Nr.

AP0034217

Abstracting Service:  
CHEMICAL ABST. 4-70

Ref. Code

UR 0078

S

74244r Compounds of the hydroxotetraazalatodiranylate ion.  
Shechelokov, R. N.; Belomestnykh, V. I. (Inst. Obshch. Neorg.  
Khim. im. Kurnakova, Moscow, USSR). *Zh. Neorg. Khim.*  
1970, 15(1), 147-51 (Russ). Cryst.  $M_n[(UO_2)_2(C_2O_4)_n(OH)] \cdot$   
 $nH_2O$  (where M and n are: Na 4; K, 5; Rb, 2; Cs, 2;  $CN_2H_4$ ,  
3) were prep'd. and their refractive indices, temp. of dehydration,  
temp. of  $C_2O_4^{2-}$  decompn., and  $\mu(UO_2^{++})$  are tabulated. It is  
assumed that  $[(UO_2)_2(C_2O_4)_n(OH)]^{2-}$  has an OH bridge.

HMJR -1

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REEL/FRAME  
19710870

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--EXPERIMENTAL VERIFICATION OF THE INFLUENCE OF THE HALL EFFECT ON  
THE PENETRATION OF A HIGH FREQUENCY TRAVELLING MAGNETIC FIELD INTO A  
AUTHOR--(02)--SHMICHUK, V.P., SHCHELOKOV, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--NUCLEAR FUSION, FOL. 10, MAR. 1970, PP 37-42  
DATE PUBLISHED----MAR70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--HALL EFFECT, PLASMA CONTAINMENT, ALTERNATING MAGNETIC FIELD,  
RF FIELD, MAGNETIC PERMEABILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1985/1835 STEP NO--AU/0000/70/010/000/0037/0042  
CIRC ACCESSION NO--AP0101882  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0101882

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS OF MEASUREMENTS MADE IN A 40 EV PLASMA CONTAINED BY A 500 OE HF MAGNETIC FIELD TRAVELING ALONG A PLASMA COLUMN ARE COMPARED WITH COMPUTED VALUES FOR THE PENETRATION OF SUCH A FIELD INTO A HOMOGENEOUS SOLID CYLINDER WITH CONDUCTIVITY  $\Sigma$  AND FREE ELECTRON CONCENTRATION  $N$ . TO OBTAIN SATISFACTORY AGREEMENT WITH THEORY, IT WAS SUFFICIENT IN THE CONDUCTIVITY CALCULATIONS TO TAKE INTO ACCOUNT THE CROSS SECTION FOR ELECTRON ATOM COLLISIONS. IT IS SHOWN, IN ADDITION, THAT FOR IONIZATION COEFFICIENTS HIGHER THAN 5PERCENT THE MAGNETIC FIELD AND PLASMA PRESSURES BALANCE. FACILITY: AKADEMIIA NAUK SSSR, RADIOTEKHNIKESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 624.139.55

SHCHELOKOV, V. K

"Regulating the Thermal Influence of a Building on a Permafrost Foundation"

Moscow, Osnovaniya, Fundamenty i Mekhanika Gruntov, No 1, 1971, pp 31-33

Abstract: The article deals with the thermal influence of buildings erected in northern regions upon a permafrost foundation. For calculating the optimal thermal conditions of cold underfloor spaces, a method is given which determines the temperature of the frozen foundation, and consequently, its carrying capacity, as well as the heat process of the building. This method permits the most economical solution of the problem to be arrived at. 4 tables. 6 bibliographic entries.

1/1



Industrial

USSR

UDC 621.43.011:533+621.5:533

SHCHELOKOV, Ya. M., TELEGIN, E. M., BURGANOV, A. A.

"Results of Tests of Industrial Models of Relaxation Vibration Combustion Chambers"

V sb. Vibrats. gorenije v nekot. model'n. ustroystvakh ((Vibration Burning in Some Model Devices--collection of works), Kazan', Kazan' University, 1970, pp 130-141 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B369)

Translation: The paper describes the results of experimental studies of four types of combustion chambers operating in the vibration combustion mode. It is pointed out that the ignition of fuel in this mode permits intensification of the combustion process. A brief survey is presented of works dealing with research on chambers of this type. Two of the chambers had separate supplies for the gas-air mixture, while the other two were equipped with premixing devices. The diameters of the chambers and their lengths were changed in the experiments. The goal of the research was to determine the regions of existence and frequencies of oscillations, and also to compare the results with computed data for the boundaries of the region and frequencies of oscillations. Natural gas was used in the ex-

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SHCHELOKOV, Ya. M. et al., Vibrats. goreniye v nekot. model'n. ustroystvakh, Kazan', Kazan' University, 1970, pp 130-141

periments. The rates of flow of air and gas were measured as well as the frequencies of oscillations. The effect which the length of the flame run has on the dimensions of the region of existence is determined in terms of the volumetric flow rates of air and gas. The frequency of the oscillations is determined as a function of the flow rate of the mixture when tube lengths are varied. Applicability of the formula to the frequency of oscillations in nonresonance vibration combustion systems is demonstrated. Bibliography of 23 titles. Yu. F. Dityakin.

2/2

- 126 -

USSR

UDC 582.232-119:576.8

KVASNIKOV, Ye. I., STOGNIY, I. P., TRAVCHUK, T. P., SHCHELOKOVA, I. F., KLYUSHNIKOVA, T. M., and GRINBERG, T. A., Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR, Kiev

"Blue-Green Algae From the Kremenchug Reservoir as a Raw Material for Growing Microorganisms"

Kiev, Gidrobiologicheskii Zhurnal, Vol 7, No 6, Nov/Dec 71, pp 80-83

Abstract: Blue-green algae of the Kremenchug reservoir contain a considerable amount of polysaccharides both easy and difficult to hydrolyze, including easily accessible ones for assimilating glucose, mannose, galactose, and xylose. They are also rich in protein substances which can, upon hydrolysis, be converted into amino acids and used in the process of growing microorganisms. Algae contain a sufficient amount of ash elements, but they are poor in phosphorus. Blue-green algae contain a large selection of B-group vitamins. These algae contain all the components necessary for the development of heterotrophic microorganisms used in the brewing and food industry. The necessary number of components can be balanced.

1/1

- 17 -

USSR

UDC: 538.4

POVKH, I. L., CHEKIN, B. V., SHCHELUKHIN, Ye. M.

"Determination of Fluid Pressure in a Rectangular Mold in the Presence of Crossed Electric and Magnetic Fields"

Tr. Donetsk. NII chern. metallurgii (Works of the Donetsk Scientific Research Institute of Ferrous Metallurgy), 1970, No 20 (4), pp 131-136 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7B10)

Translation: The authors consider distribution of electric current and Lorenz force in a rectangular parallelepiped all of whose walls are non-conductive with the exception of two identical electrodes of rectangular shape located opposite each other on parallel vertical walls. Constant current density is preassigned on the electrodes. An external magnetic field (the induced field is disregarded) which is uniform is horizontally directed across the main current. The solution is presented in the form of infinite series. Assuming that the parallelepiped contains a quiescent heavy fluid, and disregarding the horizontal component of the Lorenz force, the authors calculate the pressure in the fluid. A comparison with an experiment shows satisfactory accuracy of the calculation. S. A. Regirer.

1/1

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USSR

UDO 535.215.1:620.152

SAVINOV, YE. P., ~~SHCHEMELEV, V.N.~~

"On The Regularities Of Forming X-Ray Photoemission In Dielectrics"

Uch. zap. LGU (Scientific Annals. Leningrad State University), 1970, No 354, pp 118-124 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A14)

Translation: An analytical computation is performed for the pulse quantum yield of the x-ray photoeffect  $\chi_n$  and the average number  $\bar{n}$  of an elementary event of emission, taking into account the effect of secondary emission phenomena on the nature of formation of the photoemission events. Expressions are obtained which show the dependence of  $\chi_n$  and  $\bar{n}$  on the ratio of the energy of the x-ray quantum  $h\nu$  and the energy necessary for creation of one internal secondary electron capable of entering into a vacuum, and also on the ratio of the average depth of the secondary electron yield and the average depth of penetration of x-ray radiation. The experimental spectral and angular dependences  $\chi_n$  and  $\bar{n}$  for a CsJ photocathode are presented. 3 ill. 20 ref. N.S.

1/1

Radiation Chemistry

USSR

UDC 544.6:546.65

SHCHEMELEVA, G. G., BAGDASAROV, R. N., and STEPANENKO, YU. V., Chair of Analytical Chemistry, Rostov-on-Don State University, Rostov-on-Don

"Spectrophotometric Study of the Interaction of Uranium (VI) with 9-p-Nitrophenyl-2,3,7-trihydroxy-6-fluorone"

Ivanovo, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, Vol 16, No 2, 1973, pp 198-201

Abstract: A method for the determination of  $UO_2^{++}$  by the reaction with "p-nitrophenylfluorene" (9-p-nitrophenyl-2,3,7-trihydroxy-6-fluorone; I) was developed. To a solution containing 5-50 gamma  $UO_2$ , 5 ml of an acetate buffer solution (pH 6.0-6.2) and 3 ml of a solution of I ( $2 \times 10^{-3}$  g-mole/l.) in EtOH were added, whereupon the solution was diluted to 25 ml. A raspberry-red color developed, which was due to the formation of a compound of I with  $UO_2^{++}$  in a 2:1 ratio. Two H atoms (one per molecule in two molecules of I) were substituted by one  $UO_2$  group; this indicated that I reacted with  $UO_2^{++}$  as an orthohydroxyquinone. The colored solution was subjected to spectrophotometry at 530 nm. The dissociation constant of the  $UO_2$ -I compound, determined by the  $1/2$

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SHCHEMELEVA, G. G., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, Vol 16, No 2, 1973, pp 198-210

method of dilution, was  $7.9 \times 10^{-15}$ . The molar coefficient of extinction of the compound, determined according to Komar', was  $2.2 \times 10^{-4}$ . Beer's law applied at U concentrations of 0.2-10 gamma/ml. The relative error of spectrophotometric determinations of U in pure  $UO_2^{++}$  salts was  $\leq 2.5\%$ .

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SHCHENIN, O. P.

PROBLEMS AND PROSPECTS OF CONTROLLING MALARIA IN TROPICAL AFRICA  
COUNTRIES

UFG: 616.524.1-024.4.02

[Article by O. P. Shchenin, B. V. Kuznetsov, A. S. Pirogov, A. V. Pirogov, Moscow, *Sovetskaya Meditsina*, 1972, No 12, pp. 1711-1712, and 1713-1714, 13 June 1972, pp. 59-62]

At the present time, when malaria has been eradicated from all European countries and more than half of the entire population of Asia and American countries live in areas that have been totally or partially freed of this ailment, in the countries of tropical Africa, as in the case many centuries ago, virtually the entire population suffers from malaria, and 500,000 children up to five years of age die every year.

The reasons for the extreme lag of African countries with regard to control of malaria, in relation to other parts of the world are complex and diverse. They are related first of all to the recent history of these countries, as indicated by the very history of the elimination of this disease over the vast territories of the African continent.

We can distinguish three periods in the history of active war against malaria in tropical Africa. The first period goes from the start of the 19th Century to the end of the 1940s. Its typical characteristic was that malaria control measures were performed only among colonial troops and the colonial administration. The limited measures in that period were performed among the local population in the 1930s-1940s and motivated usually by strategic or economic considerations. The entire population of tropical Africa was virtually without any policies in

The second period, which is referable to the 1950s, was a transitional one. It coincided with the upsurge of the national liberation movement and the start of disintegration of the colonial empire on the African continent, and it was characterized by the fact that local

\*The data were reported to the Fifth International Congress on Tropical Medicine (10-15 May 1972, Bulgaria).

JRS 58117  
31 Jan 73



USSR

UDC 539.4

PANIELEYEV, A. K., RZHAVIN, L. N., GL SHCHENKO, N. I., KONOVALOV, V. I., and  
TRIPOL'SKIY, S. S. (Zaporoz'ye)

"Investigation of Combined Vibrations of the Disk-Blade System of the Impeller  
of a Turboprop-Engine Turbine"

Kiev, Problemy Prochnosti, No 11, Nov 73, pp 78-81

Abstract: In order to study the nature and modes of the vibrations of a turbo-prop-engine turbine, as well as the distribution of the stresses, a tensometric investigation was conducted of the entire set of the 82 blades and the disk of the turbine impeller. Results of the conducted tests show that the cause of the high stresses occurring in the blades is to be found in the critical impeller rotation rates, at which combined vibrations of the disk-blade system occur in accordance with a mode with five node diameters. Frequency adjustment of the disk-blade system was conducted via variation of the system components. A correlation was established between the critical rotation rates and the average frequency during the axial mode of vibrations of the blade set. On the basis of this correlation, control over the average vibration frequency of the blade set during the axial vibration mode has been introduced into the process of blade production. 5 figures.

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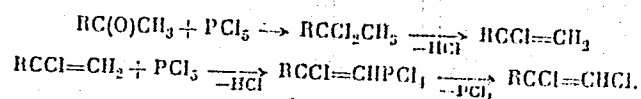
UDC 547.341

FOKIN, A. V., KOLOMIYETS, A. F., and SHCHENNIKOV, V. S.

"Reactions of Phosphorus Pentachloride With Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 801-802

Abstract: The reaction of  $\text{PCl}_5$  with ketones forms 2-(chloroalkenyl) phosphorotetrachlorides in addition to the gem-dichloroalkanes and chloroalkanes. The yield of the former can be increased with an excess of  $\text{PCl}_5$ ; the yield of the latter two is increased somewhat by increasing the temperature and reaction time. Thus, in these reactions, the phosphorylation of the chloroalkene is the first step in the secondary rearrangement. The reactions in the  $\text{PCl}_5$ -ketone system may be outlined as follows:



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UDC 547.27+547.562

FOKIN, A. V., KOLOMIYETS, A. F., SHCHENNIKOV, V. S., and STUDNEV, Yu. N.

"Reactions of 2-Aryl(Alkyl)thioethanols With Phosphoric Acid"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 7, No 7, Jul 71, pp 1406-1407

Abstract: Reacting phosphoric acid with 2-aryl and 2-alkylthioethanols in solutions produces good yields of respective simple ethers. A mixture of 0.1 g-mole of aryl or alkylthioethanol, 50 ml toluene or xylene, and 0.5 g of anhydrous phosphoric acid is refluxed under a Dean-Stark trap as long as water is being produced. The reaction mixture is then cooled, dissolved in 50 ml benzene, washed with sodium carbonate until neutral, dried and vacuum distilled to yield the desired products.

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USSR

UDC: 622.243.94

BELYAYEV, V. P., VERCHEN, A. O., MARTYNOV, V. P., PROTSVETOV, Yu. G.,  
SHCHERNIKOV, Ye. V., Moscow Geological Prospecting Institute imeni S.  
Ordzhonikidze

"Some Results of Modeling of the Process of Thermomechanical Destruction  
of Rocks, Using a Laser as the Heat Generator"

Moscow, IVUZ Geologiya i Razvedka, No 7, Jul 71, pp 125-126

Abstract: The authors discuss the feasibility of using lasers as the  
heat source for combination thermomechanical destruction of rocks.  
Research was done using a 30-watt continuous laser based on a mixture of  
CO<sub>2</sub>, N<sub>2</sub>, and He. The rock specimen was chucked up in a lathe with a special  
device for controlling tool pressure over a wide range. The laser beam  
was focused ahead of the tool into a spot with a diameter equal to the  
width of the tool. Spindle rotation was 18 rpm, and cutting was done  
for 3 minutes. The effectiveness of laser heating was determined by com-  
parison with rock destruction by cutting alone. The results show that  
heating increases cutting effectiveness by a factor of 2.25-3.5. One table.

1/1

USSR

Welding

UDC 621.791.052.01:669.295

KOLACHEV, B. A., Doctor of Technical Sciences, MAKONOVA, F. S., Engineer,  
ARTSYBASOV, YU. N., Engineer, SHCHENNIKOVA, A. YE., Engineer, and GORSEKOV,  
YU. V., Engineer

"Effect of Expansion and Vacuum Annealing on Residual Stresses in Welded  
OT4-1 Alloy Joints"

Moscow, Svarochnoye Proizvodstvo, No 2(460), Feb 73, pp 35-36

Abstract: The effect of expansion and vacuum annealing on residual stresses of the first and second types across the weld seam and over the thickness of the weld seam were investigated on specimens of 2-mm-thick OT4-1 alloy sheet material. The stress distributions are analyzed by reference to diagrams. Tensile stresses of the first type act in the metal of the seam immediately after welding; they are maximum on the initial metal -- seam boundary and they change to compression stresses 6 mm from the seam center. Expansion decreases of the first type, and vacuum annealing eliminates them completely. Residual stresses of the second type on the order of  $10 \text{ kg/mm}^2$ , act immediately after welding in the weld joint; the microstresses of the weld joint are only slightly affected by expansion, but they decrease significantly with vacuum annealing. The decrease of residual stresses as a result of expansion and vacuum annealing decreases the tendency of welded joints to develop cracks. Four figures, three bibliographic references.  
1/1

USSR

UDC 621.787:620.178.3

UMANSKIY, YA. S., GRINCHENKO, I. G. and SHCHENNIKOVA, A. YE. (Moscow Institute of Steels and Alloys)

"The Dependence of Fatigue Strength on Metal Surface Hardening"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 3, 1970, pp 29-31

Abstract: An investigation was made to select the physical parameters for controlling metal surface hardening. The relationship among fatigue strength, magnitude and depth of hardening, and properties of  $\Delta$  a/a thin crystal structure was studied for this purpose. Tests were conducted on the AD33Ti alloy and 30KhGSA steel. The test procedure is briefly described. The fatigue strength of the samples was determined on Sidorin's apparatus at symmetrical flexure and  $10^7$  cycles. The characteristics of a thin crystal structure (the  $\Delta$  a/a microstress and the magnitude of D blocs) were determined by the method of harmonic analysis of X-ray ( $\beta$ ) lines, while the dislocation density was obtained from  $1/D^2$ . The first-order residual stresses were determined by the  $\sin^2 \psi$  method. The results show that to evaluate the quality of surface hardening of the AD33Ti alloy, it is necessary to use the residual microstresses, the physical widening of  $\beta$  lines measured on the surface, and the depth of the hardened layer. The residual microstresses measured on the surface can be used to control the hardening of 30KhGSA steel. 1 figure, 3 tables, 9 references.

1/1

- 4 -

USSR

UDC 51

~~SHCHEPAKIN, M. B.~~

"Digitalization of Continuously Distributed Random Vectors in the Problems of Stochastic Programming"

V sb. Mat. metody issled. i optimiz. sistem (Mathematical Methods of Investigation and Optimization of Systems -- collection of works), Kiev, 1971, pp 14-19 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V499)

No abstract

1/1

Marine & Shipbuilding

USSR

UDC 532.526

GORELOV, D. N. and SHCHEPANOVSKAYA, G. I. (Novosibirsk)

"A Method of Solving Problems of Flow Past Bodies by a Viscous Liquid at Large Reynolds Numbers"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 4, 1973, pp 50-58

Abstract: An approximate method is proposed for solving problems of flow past bodies by a viscous liquid at large Reynolds numbers. The method is based upon subdivision of the region of flow into two regions; in each of them is formulated and solved its own boundary-value problem, account being taken of the mutual influence of flow of the liquid in the two regions. In the region adjoining the body, the flow of the liquid is described by the Navier-Stokes equations, while in the outer region the flow is described by the Euler equations. At the boundary of these regions, which is not known in advance, the conditions of continuity of the velocity vector and the stress tensor must be satisfied.

The method is used for solving the problem of flow by a viscous incompressible fluid past a semi-infinite plate. The solution is sought in the form of an asymptotic expansion according to the small parameter  $\varepsilon = Re^{-1/2}$ .  
1/2



USSR

GORELOV, D. N. and SHCHEPANOVSKAYA, G. I., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 4, 1973, pp 50-58

Solutions on the order of  $\varepsilon^0$  and  $\varepsilon^1$  are constructed. Results of the calculations are presented. 3 figures. 3 references.

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USSR

UDC 542.61:546.791

PUSHLENKOV, M. F., KUZNETSOV, G. I., SHCHEPETIL'NIKOV, N. N., POPOV, G. P.,  
and ZELENIN, L. I.

"Study of the Extraction Rates in Systems Containing Tributyl Phosphate. IV.  
Extraction of  $UO_2(NO_3)_2$  While Mixing it in a Centrifugal Field"

Leningrad, Radiokhimiya, Vol 14, No 2, 1972, pp 235-241

Abstract: A study was carried out on the extraction rate of uranium in the system  $UO_2(NO_3)_2-HNO_3-H_2O$ -tributyl phosphate-solvent in a centrifugal field. It has been shown that under these conditions the kinetics of mass transfer depends to a great extent on the rotation rate. With a 4000 rpm rate the extraction process is practically completed in 0.8 sec. The effectiveness of the extraction is about 1.3 times greater when carbon tetrachloride is used as a solvent instead of the usual mixture of saturated hydrocarbons boiling in the range 110-270°C. Hydrodynamic properties of the centrifugal extraction apparatus have been studied; formulas were developed for the calculations in layer separation chamber. It has been established that the completeness of phase separation is determined by the velocity of phase flows, rotation rate of the apparatus, and the difference in phase densities.

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1/2 019  
UNCLASSIFIED  
TITLE--RATE OF EXTRACTION IN SYSTEMS CONTAINING TRIBUTYLPHOSPHATE. II.  
EXTRACTION OF URANYL NITRATE -U-  
AUTHOR-(02)-PUSHLENKOV, M.F., SHCHEPETILNIKOV, N.N.  
COUNTRY OF INFO--USSR  
SOURCE--RADIOKHIMIYA 1970, 12(1), 23-33  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--URANYL NITRATE, SOLVENT EXTRACTION, ORGANIC PHOSPHATE,  
TRIBUTYLPHOSPHATE, ACTIVATION ENERGY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1208  
STEP NO--UR/0186/70/012/001/0023/0033  
CIRC ACCESSION NO--AP0128626  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128626

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXTN. OF UO SUB2 (NO SUB3) SUB2 FROM AQ. HNO SUB3 SOLNS. BY USING BU SUB3 PO SUB4 SOLNS. IN CCL SUB4 IS A REACTION OF THE 1ST ORDER. THE RATE OF EXTN. K (WHEN USING A 1.1 MOLAR BU SUB3 PO SUB4 SOLN. AS EXTRACTANT AT 20DEGREES) IS PRACTICALLY INDEPENDENT OF THE INITIAL HNO SUB3 CONC. IN THE AQ. PHASE (BETWEEN 0 AND 4M) AND DECREASES FROM 0.024-0.026 TO 0.010-0.014 CM-MIN WHEN THE INITIAL UO SUB2 (NO SUB3) SUB2 CONC. IN THE AQ. PHASE IS INCREASED FROM 0.1 TO 0.5 MOLE-L.; THE BU SUB3 PO SUB4 CONC. IN THE ORG. PHASE (BETWEEN 1.1 AND 3.4 MOLE-L.) HAS A SLIGHT AND IRREGULAR EFFECT ON K. THE VALUE OF K INCREASES SLIGHTLY WITH INCREASING RATE OF AGITATION OF THE SYSTEM, AND DECREASES SHARPLY WITH DECREASING TEMP., E.G., IN THE EXTN. FROM 0.42M UO SUB3 (NO SUB3) SUB2 SOLNS. IN 1M HNO SUB3 (BY 1.1M BU SUB3 PO SUB4), K DECREASES FROM 0.024 TO 0.011 CM-MIN WHEN THE TEMP. IS REDUCED FROM 21.2 TO 19.5DEGREES; K IS PRACTICALLY INDEPENDENT OF THE H SUB2 O CONC. IN THE ORG. PHASE (UP TO 3.5 MOLE-L.). THE ACTIVATION ENERGY OF THE EXTN. REACTION IS 9.5-11 KCAL-MOLE; THE RATE OF EXTN. DECREASES WHEN CHLOROFORM OR DICHLOROETHANE ARE USED AS THE ORG. DILUENTS INSTEAD OF CCL SUB4. THE EXPTL. DATA INDICATE THAT THE HNO SUB3 IS EXT. INTO THE ORG. PHASE BEFORE THE UO SUB2 (NO SUB3) SUB2, BUT SUBSEQUENTLY THE UO SUB2 (NO SUB3) SUB2 DISPLACES THE HNO SUB3 FROM THE ORG. PHASE.

UNCLASSIFIED

USSR

UDC 535.376:621.382

SUSHKOV, V.P., SHCHETILOVA, L.A.

"Degradation Of Intensity Of Radiation Of Injection Light Sources"

Elektron.tekhnika.Nauch.-tekhn.sb.Poluprovodn.pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1971, No 5(62), pp 3-7 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 23260)

Translation: A mechanism of the degradation of light-emitting diodes is suggested, connected with a change of the rate of radiative recombination and caused by the specific behavior of the doping impurity. The dependence is calculated of the integrated intensity of radiation on the time, the current flowing through the diode, and the principal parameters of the diode material. A comparison with experiment is made, based on tests of light-emitting diodes of GaAs with Zn and Si and GaP with Zn. 3 ill. 6 ref. Summary.

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1/2 030  
UNCLASSIFIED  
TITLE--MECHANISM OF THE DEGRADATION OF THE GALLIUM ARSENIDE IN  
ELECTROLUMINESCENT DIODES -U-  
AUTHOR--(02)-SUSHKOV, V.P., SHCHEPETILOVA, L.A. S  
COUNTRY OF INFO--USSR  
SOURCE--FIZIKA I TEKH. POLOPROV., APR. 1970, 4, (4), 788-790  
DATE PUBLISHED----APR 70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS  
TOPIC TAGS--GALLIUM ARSENIDE, ELECTRON EMISSION, ELECTROLUMINESCENCE,  
DIODE CIRCUIT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3003/0673  
CIRC ACCESSION NO--AP0129838  
STEP NO--UR/0449/70/004/004/0788/0790  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129838

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISMS RESPONSIBLE FOR THE DEGRADATION (GRADUAL FALL IN EMISSION) OF THE GAAS IN ELECTROLUMINESCENT DIODES ARE DISCUSSED. OF THE TWO SIMPLE MODELS INVESTIGATED, NEITHER FULLY EXPLAINS THE EXPERIMENTAL DATA. HOWEVER, BY SELECTING A COMPROMISE MODEL, WHICH IN EFFECT CONSTITUTES A NEW FORM OF AGEING IN LIGHT DIODES, A FAIR REPRESENTATION OF THE EXPERIMENTAL FACTS MAY BE SECURED. THE GREATEST RATE OF DEGRADATION ACCORDING TO THIS MODEL OCCURS IN GAAS SAMPLES WITH A HIGH INITIAL EMISSION POWER.

UNCLASSIFIED

USSR

UDC 546.74'821'72'21:548.313

DUBROVINA, I. N., SHCHEPETKIN, A. A., and CHUFAROV, G. I., Institute of Metallurgy, Ural Scientific Center, Academy of Sciences USSR

"Peculiarities of Spinel Solid Solutions in the Ni-TiOFe-O System"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 8, 1972, pp 1459-1464

Abstract: The conditions of synthesis, mutual solubility of components, magnetic properties, and crystallochemical peculiarities (placement of cations on lattice nodes) in the three-component system  $\text{NiFe}_2\text{O}_4$ - $\text{Fe}_3\text{O}_4$ - $\text{Fe}_2\text{TiO}_4$  were studied. It was concluded that full mutual solubility of the components in this system occurs. The parameters of the crystalline lattice of the ternary solid solution follows the additive rule with good accuracy. The concentration dependences of magnetic moment of saturation and Curie temperature of the binary system  $(\text{Fe}_2\text{TiO}_4)_c$  and certain ternary compositions were measured. The distribution of cations among octahedral and tetrahedral nodes of the spinel structure in the system was similar to the distribution produced additively from the distributions characteristic for the individual components.

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1/3 017 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SYNTHESIS AND EQUILIBRIUM DURING THE DISSOCIATION OF SOLID  
SOLUTIONS OF IRON AND MANGANESE ORTHOTITANATES -U-  
AUTHOR--(04)-SHCHEPETKIN, A.A., ANTONOV, V.K., ZAKHAROV, R.G., CHUFAROV,  
G.I.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (2), 144-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--CHEMICAL SYNTHESIS, SOLID SOLUTION, CHEMICAL REDUCTION,  
SPINEL, CRYSTAL LATTICE STRUCTURE, TITANATE, MANGANESE COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1998/1122 STEP NO--UR/0370/70/000/002/0144/0146  
CIRC ACCESSION NO--AP0121682  
UNCLASSIFIED